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10/089,668	08/21/2002	Heinz Luft	10191/2370	8941
26646	7590	02/22/2006	EXAMINER	
KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			KIM, CHRISTOPHER S	
			ART UNIT	PAPER NUMBER
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DATE MAILED: 02/22/2006				

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/089,668  
Filing Date: August 21, 2002  
Appellant(s): LUFT, HEINZ

**MAILED**  
**FEB 22 2006**  
**Group 3700**

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Gerard A. Messina  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed December 5, 2005 appealing from the Office action mailed March 14, 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

WO 01/11220

Boecking

2-2001

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

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Claims 26-29 stand rejected under 35 U.S.C. 102(e) as being anticipated by Boecking (WO 01/11220).

See U.S. Patent Number 6,626,371 B1 for the English equivalent to WO 01/11220).

Claim 26:

Boecking discloses a fuel injector comprising:

an actuator (high pressure fuel pump, column 1, lines 25-30);

a valve closing body 6 to form a sealing seat ( $d_s$ ) with a valve seat face;

a valve needle 5 mechanically linked to the actuator (the high pressure fuel pump is linked to the valve needle 5 by fluid mechanics involving fuel fluid and the actuating/control surfaces of needle 5) and to be acted upon by a restoring spring 12 in a closing direction, to actuate the valve closing body 6;

a sleeve 13 to pre-stress (column 4, lines 22-25) the restoring spring 12; and

an adjusting body 16 placed in direct contact with the sleeve 13 so as to be adjustable (the adjusting body is adjusts, i.e. moves, during the operating cycle; see column 5, lines 1-9, in particular) so that a fuel amount flowing per unit of time through the fuel injector depends on a position of the adjusting body 16 in the sleeve 13.

The position of the adjusting body 16 determines/affects the compression of spring 12 which in turn determines/affects the movement of needle 5 which in turn determines/affects the size of the gap between the sealing seat ( $d_s$ ) and the valve seat on nozzle body 2. The gap determines the how much fuel can pass/flow through the fuel injector per unit of time.

Claim 27:

The sleeve 13 is inserted into a central recess 10 in the fuel injector.

Claim 28:

The restoring spring 12 is supported on an injection end (the upper end of sleeve 13 having inlet throttle 19) of the sleeve 13.

The claim fails to define “an injection end.” The broadest reasonable interpretation of “injection end” that is readable on Boecking can include: the end of sleeve 13 that injects fuel into chamber 15 of sleeve 13. In figure 1, the fuel is throttled into chamber 15 through inlet throttle 19. In figure 2, fuel is throttled into chamber 15 through auxiliary throttle 26. In either case, the fuel is injected into chamber 15 from the upper end of sleeve 13. Therefore, the upper end of sleeve 13 is considered the injection end of sleeve 13. Restoring spring 12 abuts the upper end of sleeve 13. Claim 28 is readable on Boecking.

Claim 29:

The position of the adjusting body 16 is variable in the sleeve 13 via a first adjusting tool.

The adjusting tool is not a positively claimed limitation. The claim merely requires that the adjusting body 16 be variable (capable of being varied) in the sleeve 13 via a first adjusting tool. In appellant’s device (see applicant’s figures), connection to fuel feed 16 must be disconnected and the filter 25 removed before the adjusting tool 45, 52, 56 can be inserted to vary the adjusting body 40. Similarly, in the device of Boecking, once the elements above inlet 11 are removed, a tool such as a bent rod can

be inserted through inlet 11 to move/vary the adjusting body 16 in sleeve 13.

Alternatively, valve 22 can be removed and a tool having an expansion head can be inserted through throttle 21 to move/vary the adjusting body 16 in sleeve 13.

#### **(10) Response to Argument**

Appellant argues that the sleeve 13 of Boecking does not pre-stress the restoring spring 12. Appellant states that spring 12 applies a force against element 13 and nozzle needle 5 to urge element 13 and nozzle needle 5 in a closing direction. Appellant further argues that the force applied by the element 13 to the spring 12 is not desired. Appellant's conclusion that the sleeve 13 does not pre-stress the restoring spring is flawed. Boecking discloses, in column 4, lines 12-26, spring 12 is braced between the end face of the nozzle needle 5 remote from tip 6 and the collar 17. Boecking further discloses, in column 4, line 23, that the spring 12 is pre-stressed. When the needle 5 is closed, the sleeve 13 and collar 17 keep the spring pre-stressed. Otherwise, the sleeve 13 would move downward until the spring is not stressed. But this is not the case since in the closed position of the needle, the spring 12 is pre-stressed.

Appellant further argues that the recitation "sleeve to pre-stress the restoring spring" requires positioning of the sleeve such that it applies a desired force to the restoring spring, e.g., so that the restoring spring can act upon the valve needle in a closing direction. Even though appellant's example "so that the restoring spring can act upon the valve needle in a closing direction" is not a claimed limitation, Boecking's device functions exactly so. The sleeve 13 is positioned in chamber 10 such that it

applies a desired force (the pre-stress) to the restoring spring 12 so that the restoring spring 12 can act upon the valve needle 5 in a closing direction. Appellant urges that if the sleeve is provided, as in Boecking, at the injection end of the spring, it does not apply the desired force to cause the spring to act upon the valve needle in the closing direction. Appellant is again mistaken. Boecking specifically discloses, in column 4, lines 50-54, "...the pressure in the control chamber 15 rises, and because of the prestressing force of the nozzle spring 12, the nozzle needle 5 is pressed with its tip 6 back against the associated nozzle needle seat."

Next, appellant argues that the adjusting body 16 of Boecking is not adjustable because it remains stationary. Again, appellant is mistaken. Boecking specifically discloses that adjusting body 16 moves and is not stationary. In column 5, lines 2-6, Boecking discloses, "...the bush 16 can lift from its seat on the retaining body 3 in the closing motion of the nozzle needle 5. The lifting of the bush 16 from its seat is assured by the auxiliary throttle 26."

Next, appellant argues that Boecking does not disclose the restoring spring being supported on an injection end of the sleeve. The claim fails to define "an injection end." Claim construction dictates that if there was only one particular injection end, the claim would merely recite "the injection end of the sleeve." But because the claim recites "an injection end," it eludes to the fact that there is no particular injection end and the claim must provide an antecedent basis for the term. For example, there is no need to provide an antecedent basis for "the inside of a ball" or "the six sides of a cube." A ball inherently has one inside, and by definition, a cube is made of six sides. Therefore,

because appellant provides an antecedent basis for “an injection end” but fails to further define “an injection end,” the broadest reasonable interpretation of “injection end” can include any “end” which is associated with “an injection.” As read on Boecking, it can include: the end of sleeve 13 that injects fuel into chamber 15 of sleeve 13. In figure 1, the fuel is throttled into chamber 15 through inlet throttle 19. In figure 2, fuel is throttled into chamber 15 through auxiliary throttle 26. In either case, the fuel is injected into chamber 15 from the upper end of sleeve 13. Therefore, the upper end of sleeve 13 is considered the injection end of sleeve 13. Restoring spring 12 abuts the upper end of sleeve 13. Claim 28 is readable on Boecking.

Finally, appellant argues that Boecking does not disclose that “the position of the adjusting body is variable in the sleeve via a first adjusting tool.” Appellant is again mistaken. The claim merely requires that the adjusting body 16 be variable (capable of being varied) in the sleeve 13 via a first adjusting tool. The adjusting tool is not a positively claimed limitation. In appellant’s device (see applicant’s figures), connection to fuel feed 16 must be disconnected and the filter 25 removed before the adjusting tool 45, 52, 56 can be inserted to vary the adjusting body 40. Similarly, in the device of Boecking, once the elements above inlet 11 are removed, a tool such as a bent rod can be inserted through inlet 11 to move/vary the adjusting body 16 in sleeve 13. Alternatively, valve 22 can be removed and a tool having an expansion head can be inserted through throttle 21 to move/vary the adjusting body 16 in sleeve 13. Claim 29 merely recites a functional limitation which only requires the ability to so perform.

**(11) Related Proceeding(s) Appendix**



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No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Christopher Kim

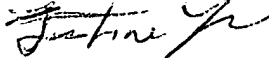
A handwritten signature in black ink, appearing to be 'C. Kim', with a long horizontal flourish extending to the right.

Conferees:

Dave Scherbel

A large, stylized handwritten signature in black ink, likely 'D. Scherbel', with multiple loops and a long horizontal stroke.

Justine Yu

A handwritten signature in black ink, appearing to be 'Justine Yu', with a cursive style and a horizontal line above the name.